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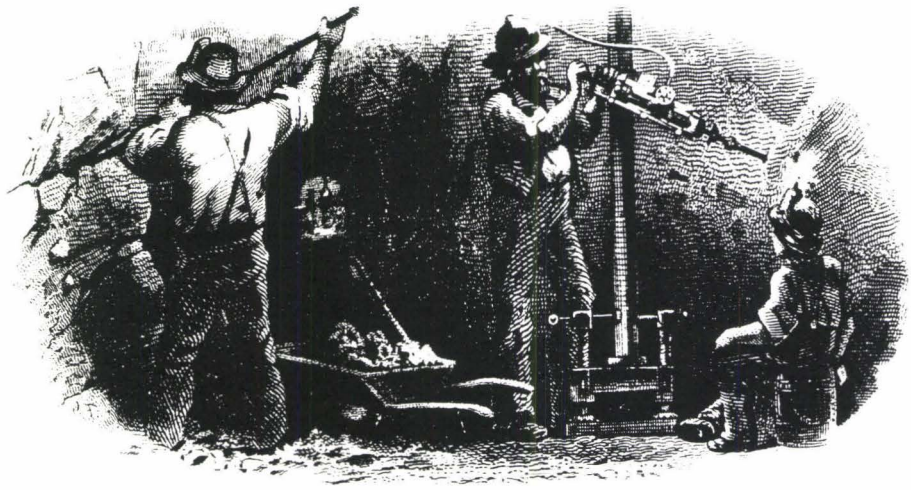
LONG TOMS AND GRIZZLIES

Mining History Interpretation on the Helena National Forest



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ABSTRACT

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TITLE: LONG TOMS AND GRIZZLIES
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ABSTRACT: On July 14, 1864, four men discovered gold at Last Chance Gulch, now Helena's main street. Miners quickly made one discovery after another in gulches surrounding Helena. By 1866 Montana was second only to California in U.S. gold production, in large part due to the rich finds in the Helena area. During my research, many fascinating legends and stories surfaced, including dramatic discoveries of huge diamonds and crystals, as well as the largest gold nugget ever discovered in Montana. Miners were colorful characters, evidenced by the names they gave to their "places", their mining equipment, and each other.

This project builds on the Forest's existing interpretive strategy to provide background information on mining through boom and bust to present, including current reclamation efforts. Interpretive recommenations are made in order to bring the history of mining on the Helena National Forest to area residents and to tourists, and to relate the past to present mining reclamation.

Keywords: Mining History, Interpretation, Gold Mining, Tourist Information

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LAST CHANCE GULCH

I reckon you have all heard told
About them days of yeller gold
When gals were scarce, and men were bold
In Last Chance Gulch.

Them good ol' days of Sixty-six
When men sluiced fortunes from the cricks
And weren't up to skin game tricks
In Last Chance Gulch.

They never used to lock a door
They blew their gold, and sluiced out more
And argued with a forty-four
In Last Chance Gulch.

They used to play the wheel with dust,
Make a killin' -- or else bust;
They never let a dollar rust
In Last Chance Gulch.

They used to drink their forty rod,
An', when a gent got on the prod,
They gave him lots of room, by God
In Last Chance Gulch.

From: *Prickly Pear Pomes*
By Robert Fletcher, Poet Lariat
Copyright 1920, Helena, Montana.

INTRODUCTION AND STATEMENT OF PURPOSE

INTRODUCTION

The Helena National Forest is located in Southwest Montana, in a region described by Travel Montana as Gold West Country. The Helena National Forest surrounds the Prickly Pear Valley and Helena, the capital city of Montana. Interstate I-15 carries travelers north and south through Helena, including tourists between Yellowstone National Park and Glacier National Park. U.S. Highway 12 carries travelers east to west, and Highway 200 carries travelers along the Blackfoot River to the Lincoln area.

Three ranger districts make up the Forest, with ranger stations in the three main communities in the area: Helena, Lincoln, and Townsend. A variety of tourist activities are provided by the city of Helena in partnership with the Montana Historical Society. Tour-trains take residents and visitors around town, and the guides give lively talks on the discovery of gold at Last Chance Gulch. The Historical Society has displays and collections related to the area's mining history. Townsend and Lincoln also have active historical societies and local museums, where visitors can view exhibits and learn about mining history. Many books have been written which cover local histories and Montana mining history, including several popular books on "ghost towns".

The Helena National Forest currently offers limited visitor information about the colorful history of mining and the important role it played in Montana's history. Only a couple of old routed wood signs in two gulches hint at events of the past.

Mining landscapes on the Forest are among our most interesting, and research shows that people are drawn to them. Interpretive information could help visitors to appreciate how mining in the gulches on the Helena National Forest helped build Montana, and understand current efforts to deal with the consequences in our reclamation efforts. Interpretive information can serve as both guide-book and souvenir, and may convince visitors to "stay another day" on the Forest and in the Helena area. Area residents, many with ancestors who came to the area in the gold rush days, would benefit

from having interpretive information in hand when they head out in the Forest for a trip to the past with their friends and families.

Current mining reclamation efforts provide another view of history. Interpretive products can include a integrated environmental message; for instance, several of the mining landscapes on the Forest are characterized by environmental abuse and exploitation -- and clearly reflect the consequences of man's past actions. While mining has been one of the most important occupations in shaping the character of both the West and the landscapes where mining activities were concentrated, these rearranged, raw landscapes do not compare favorably with "ideal" landscapes. Current knowledge and technology brings with it the responsibility to restore the soil and water to a healthier state, and the Helena National Forest is actively involved in this effort.

At a tourism conference in Oregon in 1995, Jane Maas outlined the 10 trends that affect travel today. Trend #1 is that people are seeking "life enriching vacations". She said that today's travelers seek fulfilling experiences, and many enjoy educational experiences. The outdoors and nature are "hot", ecological vacations are the fastest growing travel segment, and historic sites are increasingly popular.

STATEMENT OF PURPOSE

The time is right to interpret mining history, and to relate it to current mining reclamation efforts. The focus of this project is to:

Research the history of mining activities which occurred on lands now managed by the Helena National Forest.

Inventory locations on the forest where clusters of historic mining sites are located.

Determine prospective routes where forest visitors could view historic mining and mining reclamation activities.

Evaluate interpretive methods and media contained in the Helena Forest Interpretive Strategy for those which would best provide mining history interpretation.

Recommend a plan of action to follow when providing mining history interpretation to forest visitors.

Assemble a three-ring binder containing the research and background information to be used for reference by recreation specialists and interpretive planners to implement the mining history interpretive action items.

CHAPTER 1

EXISTING DIRECTION AND PROJECT METHODOLOGY

EXISTING DIRECTION

Forest Plan Direction

The Helena Forest Plan (1986) states as a recreation objective that "to keep the public informed of recreation possibilities, a Recreation Opportunity Guide (ROG) for each district will be completed by 1987. These ROGs will be available for viewing at each (ranger) district office and the Forest Supervisor's Office. Dispersed recreation opportunities, including both motorized and non-motorized, will be emphasized in the general forest area." NOTE: This has been done for traditional recreation opportunities, like camping, trails, and berry picking but not for viewing historic sites.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a framework used by the U.S. Forest Service to stratify and define classes of outdoor environments, activities, and experience opportunities -- across a range of settings. This method assures that national forests offer something for everyone, from primitive to rural settings, from a very high probability of solitude, self-reliance, challenge and risk to a very social experience with a minimum of challenge and risk.

Mining sites on the Helena National Forest are typically situated in the Roaded Natural ROS class, i.e. areas within 1/2 mile of better than primitive roads, although some sites are in the Semi-Primitive Motorized class. Opportunities for interpreting mining sites will focus on those sites located in the Roaded Natural ROS class.

National direction for interpretation in the the Roaded Natural ROS class is:

Interpretive Option	Recommendations
Facilities:	No shelters. Rustic developments. Simple, fixed, and portable media. Self-guided information.
Trails:	Rustic surface. Two-color signs. No audible sound.
Exhibits & Signs:	Single panels. Two-color wood or fiberglass, blended to character of site. Rustic mounting.
Audio Visual:	Limited A-V. Mostly audio, with sound contained to person.
Publications:	Self-guiding brochures. Self-help folders.
Personal Services Tours:	Self guiding. Site specific potential for guided tours.
Information:	Available at FS units.

PROJECT METHODOLOGY

Work on this project was initiated immediately upon my selection to attend the Clemson University Outdoor Recreation Management Short Course. When I suggested this topic to my supervisor, Jim Guest, in June, 1995, he enthusiastically supported the project. The Helena National Forest staff had long recognized the importance of providing mining history interpretive media to Forest visitors, but other priorities had kept it from becoming a reality.

Lance Foster, a seasonal archeologist, had previously conducted contextual studies for two historic mining districts. Lance accompanied me on field visits during the summer of 1995, and made many helpful suggestions.

To gain information necessary to accomplish the objectives of the project, I worked with numerous fellow employees, as follows:

Charlie McKenna, Transportation Engineer, provided me with information on road conditions. Proposed routes for viewing historic mining sites need to be accessible by passenger vehicles.

I visited with Bill Straley, Helena National Forest Geologist, on "why the Helena area is so rich in minerals". I received valuable historical background material from Jerry Meyer, Gary Fairchild, Carl Davis, and Vicky MacLean.

For production assistance, I worked with John Alley, Visual Information Specialist; Dave Payne, Helena Ranger District Recreation Forester, Mary Guokas, Support Services, and Mary Horstman, Historian, provided valuable review comments and advice. Beth Ihle, Geologist and Reclamation Specialist on the Townsend Ranger District, provided information on current reclamation efforts, as well as valuable reviews of report drafts.

I conducted extensive Library research at the Lewis and Clark County Library, the State Library, and the Montana Historical Society Library. This effort turned up additional fascinating background material on the early miners, their stories, and some unique items they discovered while searching for gold and other precious metals. It was during this time that I realized the project scale was too optimistic for the time available.

Also during my background research it became clear that the Helena area's mining history must be placed in context with national politics and economics, i.e. the Civil War, the coming of the railroads, the silver bust of 1893, the world wars and the need for "strategic" metals, and environmental legislation.

Helena National Forest Interpretive Strategy

Amy Teegarden, Forest Environmental Education/Interpretive Specialist, completed a Forest Interpretive Strategy in December, 1995. Amy helped me tier my project efforts to that strategy.

The forest strategy is tiered to the National Strategy for Interpretive Services (Draft). Universal interpretive access is considered. People of all ages, abilities and cultural backgrounds will be able to participate in interpretive programs and media which the Helena National Forest provides.

Mining (and its influences) was identified in the Forest Interpretive Strategy as a heritage resource topic that could be interpreted to meet the following goals:

Enhance understanding, appreciation and enjoyment of the prehistoric and historic resources as they relate to one another on the Helena National Forest and surrounding areas.

Increase awareness of management enhancement/restoration programs and stimulate participation in heritage resource programs.

Interpretive action items recommended in this report will help meet these goals. See Appendix A for an excerpt from the Forest Interpretive Strategy which describes guidelines for interpretation on the Helena National Forest.

CHAPTER 2

OVERVIEW OF THE HISTORY OF MINING ON THE HELENA NATIONAL FOREST

Montana's first big gold discovery was near Bannack City in 1862. Then on July 14, 1864, four men uncovered significant placer gold deposits at Last Chance Gulch, beginning a rush that brought miners, entrepreneurs, and capitalists that resulted in the town of Helena. That same fall miners found the third of the important Montana placer districts at Confederate Gulch in the Big Belt Mountains east of Helena. Evidence of Montana's mining past can still be found in almost every gulch in the mountains which surround Helena -- gulches now managed by the Helena National Forest.

Miners came from all parts of a young nation as well as from abroad. Their numbers included deserters, renegades and veterans from both sides of the Civil War. Others who came were prospectors who did not strike it rich in other places, like Idaho, British Columbia, Colorado or California. Miners also came from Ireland, Germany, Wales, Norway and other Scandinavian countries, Slovakian countries and from China to the Helena area, ensuring a lively time of excitement and hope, conflicts, misunderstandings and prejudices. (DeHaas, John Jr., 1980).

Most of the prospectors looked for placer gold. Erosion and other natural forces had created placer, or surface, gold deposits by disintegrating large veins of ore. In the slow process of geological time, flowing water and glacial ice had carried away the particulate gold and deposited it in the beds of ancient or still active streams, where it lay as dust, flakes, or nuggets. Placer gold, scattered about in its natural state, usually required no special processing. Such deposits were "poor man's diggings," and men of little wealth or special skill could work them easily. (Malone, Roeder and Lang, 1991).

But expensive ditches and flumes were needed for transporting water (for hydraulic mining), and these required large investments by local capitalists. Such operations played havoc with the environment, as they tore up the gulches, scattered rocks in all directions, and flushed huge amounts of silt into lower streams and rivers. (Malone, Roeder and Lang, 1991).

Miners discovered sapphires, crystals (quartz), "rubies" (garnets), enormous gold nuggets, and valuable boulders while searching for placers and veins of ore in the mountains around Helena. The largest gold nugget found in Montana was found in Deadwood Gulch in the Ophir Historic Mining District. The nugget weighed approx. 156 oz. (nearly 10 pounds). For reference, the world's largest gold nugget, the "Welcome Stranger," was found in Australia and weighed 2280 oz. (142.5 lbs.). According to Oscar A. Dingman in a 1932 report titled *Placer-Mining Possibilities in Montana*, nuggets weighing more than one-half ounce are exceedingly rare.

The "easy takings" were quickly removed by about 1870, with annual gold production in Montana's placers reaching over ten million dollars. Miners then looked for large and rich "mother lodes" embedded in buried rock. These larger, "quartz" veins required heavy, expensive machinery to break up the rock and release the gold. Mine owners constructed mills, which used a system of stamps or balls to crush the rock, using steam power. (Malone, Roeder and Lang, 1991).

Placer mining brought in the people, but it was lode mining that encouraged stable communities of concentrated populations, which in turn required a broader agricultural and timber base for support. Placer camps (like Blackfoot City in the Ophir Historic Mining District) boomed, served their purpose, and then perished when the diggings were "played out".

Miners dug prospect pits when searching for rich ore veins. Where only pits are seen, pocking the landscape, it is unlikely that miners found any ore veins worth writing home about. However, where you can see adits (entrances to tunnels) and clusters of old buildings, you are seeing a site where miners enjoyed success -- although sometimes these sites were "constructed" and used as investment scams (this is a topic for a different paper).

When mining efforts proved successful, the mining claims were usually patented and became private land. These old patented mining claims can be seen on the Helena Forest Visitor's Map as very small pieces of white (private land) surrounded by green (National Forest land). When the Helena National Forest was proclaimed in 1905, these inholdings remained in private ownership. Where evidence of past mining is located on Forest Service land, the mining activities were probably not successful enough for the miners to pursue patenting of the claim.

By 1870 droves of prospectors had left Montana. Gold output continued to decline until 1883, when it amounted to only a million dollars; then it began to climb again, this time mainly as a byproduct of industrial silver and copper mining. (Malone, Roeder and Lang, 1991).

Montana's silver mining boom headed for a peak in the late 1880s, fueled by a combination of geologic, economic, and engineering factors. These factors included: geologic concentration of silver in shallow, upper portions of vein systems near the surface of the ground; maintenance of a subsidized silver market by the federal government; infusion of outside capital; evolution of milling and smelting technology; and railroad construction to link mines, smelters, and markets. In 1887, Montana stepped forth as number one in the nation in silver production ($15.5 million worth). (Chadwick, Robert, 1982). Then in 1893 silver prices dropped drastically, and hard-rock mines closed one by one, as the owners waited for a rise in silver values.

The mining frontier of the Far West differed sharply from the normal pattern of America's westward movement. On the mining frontier, instant "cities" sprang up along forlorn gulches, often in remote locations, and then farmers and ranchers settled nearby to feed the towns. This was not a frontier that attracted many families, older people, or single, "respectable" women. The boom-and-bust mining towns were started by miners, closely followed by merchants, freighters, saloon-keepers, gamblers, and prostitutes. (Malone, Roeder and Lang, 1991).

Nearly all towns in the Helena area began as either mining camps or stage stops.

Physical elements of the mining era which remain in the gulches include log cabins, adits, tailings, dredge material along creeks, pits, parts of old mills (ore crushing equipment), rusted wheels, tracks and cables, and in a few gulches, entire intact mining camps. Historic photos show that most trees now seen around old mining camps are second growth, as timber was cut and used to build the towns, heat the homes, and power the stamp mills.

GEOLOGY

Principal deposits of precious metals occur around the edges of large rock bodies termed "batholiths" and some smaller ones called "stocks." The bodies are composed of granite and closely related rock types. They were once molten rock masses intruding upward through the crust from great depths within the earth. Associated with these molten masses were hot, water-rich "hydrothermal" fluids carrying metals in solution. The hot fluids traveled up fissures, which formed in the surrounding host rock and in the granite's outer crystallized fringe. As the solutions cooled and reached lower pressure zones near the earth's surface, they precipitated their dissolved metals. Because the solution also contained sulfurous vapors, the metals were commonly deposited as simple or complex sulfides of lead, zinc, copper, iron, silver, arsenic, and antimony. Plentiful silica in the solutions was precipated as quartz, the most abundant associated mineral. Fissure ore deposits are roughly tabular in shape and are termed "veins." (Chadwick, Robert, 1982).

The outer fringes (alteration halo) of an igneous intrusive mass is of great interest to the prospector because that is commonly where most ore bodies are found, including some of Montana's richest silver veins in the hills south of Helena. (Straley, Bill, personal communication, 1996).

Bedrock sources for the placer gold in Last Chance Gulch were in Orofino and Grizzly gulches, a few miles south of Helena near Unionville. Lode mining began in that area in 1864 and continued until 1948, working deposits in rocks adjacent to the Boulder batholith. At Marysville, a town mentioned in many "ghost town" books, the gold was mined in quantity from deposits around the margin of a granite intrusion considered to be a satellite of the Boulder batholith. (Alt and Hyndman, 1986). Similar geology resulted in rich ore bodies near Rimini, another notable "ghost town".

The Elkhorn Mountains lie south and west of Highway 12 most of the way (32 miles) between Helena and Townsend. They are a complex range consisting of a foundation of folded and faulted sedimentary rock formations that support an extensive cover of volcanic rocks that flowed or erupted from the Boulder batholith. (Alt and Hyndman, 1986).

The Big Belt Mountains, north of Townsend, consist mostly of a broad crustal arch that exposes Precambrian sedimentary rocks, or Belt formations, in its core. Patches of valley fill material exist on top of the Big Belts, so we must conclude that these rocks were under a valley floor as recently as 25 million years ago, and have been buckled into mountains sometime since then. Gold-bearing gravels at Confederate Gulch were freakishly rich, but existed only within the two acres of Montana Bar. Bedrock gold deposits proved uninspiring. Evidently the natural sluice of the stream concentrated gold weathered out of a very large volume of lean bedrock ore. (Alt and Hyndman, 1986).

Mountains in the Lincoln area consist mostly of Precambrian sedimentary rocks, or Belt formations. They began as beds of sand and mud laid down on land sometime around one or one and a half billion years ago, give or take a couple of hundred million years. Ore bodies were discovered and worked in locations where igneous intrusions invaded the sedimentary rocks.

TRANSPORTATION

Early miners arrived on foot, horseback or mule, driving an ox team, or by steam boat up the Missouri River to Fort Benton. They came from every direction, many of them from played out gold fields in Northern California.

In the 1860s the travel routes followed Indian trails or the Mullan Road. The Mullan Road, rough as it was, connected the local goldfields to Idaho and the Columbia River, and it provided a link between Fort Benton and the gold camps lying to the south and west. (Malone, Roeder and Lang, 1991).

At its peak, Montana wagon freighting was big-time business. (Willard, John, 1964). The Diamond R Freighting Company operated out of Helena in the 1860s. This outfit owned 300 wagons, 350 mules, and 500 yoke of oxen and extended its service throughout the territory. The pace of a wagon was 12 to 13 miles a day, with loaded wagons, and some of the wagon trains were two to three miles long. (Willard, John, 1964). Many concentrates of precious metals had to be hauled by wagon to Corinne, Utah, or to Fort Benton; some were ultimately shipped to Germany or Swansea, Wales,

for smelting. (Chadwick, Robert, 1982). Ore shipping costs were greatly reduced when the East Helena smelter was activated in 1888.

In 1867 Montana's Pony Express traveled three times a week from old Fort Peck to Last Chance Gulch to deliver mail. From White Sulphur Springs the riders turned west toward what is Fort Logan and then over the Big Belt Mountains to the Confederate Gulch camp, where stages picked up the mail for the last few miles into Helena. (Willard, John, 1964). Riders changed horses about every ten to fifteen miles. (Broadwater County Historical Society, 1977). Riders burned the mail to heat their coffee, and Indians stole the strange paper with the marks on it as well as the horses and equipment. It was a rollicking part of Montana's history that ended with the stage lines and the coming of the railroads. (Willard, John, 1964).

Daily stage coach service offered jolting rides, extreme heat and cold, asphyxiating dust, and swarms of insects but did a good business. The regular mail services the coaches made possible turned local post offices into community social centers. In spite of these connections with the outside world Montanans felt isolated. They eagerly awaited the arrival of the railroad, which was completed through Helena in 1883. (Malone, Roeder and Lang, 1991).

MINING METHODS AND EQUIPMENT

Mining methods range from panning gold in a teacup (which led to one early placer discovery) or gold pan to sluice boxes, hydraulics, and dredging in the placers, to lode mining of the ore veins by digging, drilling, blasting, crushing with stamps, and smelting processes.

Gold is many times heavier than other minerals. This explains why gold settles to the bottom in any moving or agitated body of gravel and water, whether in a river bed, pan, rocker or sluice box. The size of the gold particles determine the kind of washing apparatus that was used.

The following information is taken from *Placer Mining Possibilities in Montana* (Dingman, Oscar A., Montana School of Mines, Butte, Montana, June 1932):

Placer Mining Methods:

All methods of placer gold recovery required water. While "dry washers" were used in arid regions, it was considered more profitable in Montana to either bring water to the placer or take the gravel to the water when water was not immediately available at the site.

The **gold pan** was used as a prospecting tool and not a device for actual gold recovery. The pan was filled three-fourths full of water and river gravel, gyrated and washed, allowing "classifying" of material. Gold would sink to the bottom and remain, while dirt and gravel could be washed away. Sometimes shovels and frying pans were used, but gold floated away on greasy film so frying pans were not recommended.

The **rocker** was considered the premier device for saving both coarse and fine gold, in one operation by individual placer operators. This device was cheap, light in weight, durable, easily built and transported, easily operated by either one or two men, and saved all but the smallest gold particles. This device consisted of a box with 1/2" screen, and a sloping riffle frame to catch gold particles during rocking and washing actions.

The **sluice boxes** were made in sections, 12 feet long and sloping from 1/2 to 1 inch per running foot of box. A **"long tom"** was the name of one such trough for washing gold-bearing earth. Sometimes two or more boxes were connected. The sluice box was usually laid on bedrock or upon short trestles as needed for the desired fall. Loose gravel was shoveled onto the upper end of the box, water from a flume or stream washed the material down the sluice, and gold was caught in "riffles" of wood or stone. The exact amount of water for any particular gravel was determined by trial and error. The gold was cleaned up (or removed) from all depressions, burlap, sluice mats, or other fine-gold collectors.

In most sluicing operations some of the finer gold, being unable to settle in the swift water of the sluice,is carried to the dump and lost. As a means of preventing at least a part of this loss, a device called an undercurrent was devised. It consisted of a closely spaced iron grating or **"grizzly"** running parallel with the sluice and set, slightly recessed, in the bottom of a section of the sluice box near

the tail race or dump. This device spread the water quickly over a much greater area and thus reduced its velocity, and the finer gold was caught on the grizzlies.

When gold particles were collected in association with black sands, pure mercury (or "quicksilver") was added and the contents thoroughly stirred until the quicksilver had come in contact with every particle of gold. The quicksilver dissolved part of the gold, coated the rest, and resulted in a substance called amalgam. Rusty gold was sometimes cleaned by agitating the material containing the gold in a weak cyanide solution. Caustic soda or lye was also used to clean rusty gold.

Hydraulic mining involved bringing water to a site in a high flume, and then down through several hundred feet of pipe or 6" canvas hoses to huge 2-1/2" nozzles that look about like old muzzle-loading cannons, called giants or monitors. The massive jets of high pressure water from hydraulic nozzles were said to have enough force to smash a brick building with a single pass at a range of several hundred feet. These nozzles washed down high gravel banks to flush their contents through sluice boxes. Hydraulic mining was especially effective in places like Confederate Gulch, where the gold-bearing gravels were in terraces well above stream level.

Dredges, some of them of gigantic proportions, were a popular and profitable method of working gold placers from about 1904 to 1945. Most of them act as enormous floating sluice boxes. The dry-land dredge was the most frequent dredge unit used in Montana. The washing plant was generally mounted on wheels with wide iron tires or tractor treads. The plant is fed by a power shovel, generally a drag-line shovel. This dredge required a low initial cost had high mobility. The other types of dredges were dragline dredges, where the gold recovery plant was floated on pontoons in a pond and fed by a drag-line shovel or shovels on the bank of the pond. Connected-bucket dredges (bucket line dredges) were the most complicated, most expensive and most efficient gold saver of all types of equipment used. For example, one was assembled on Emigrant Gulch (Gallatin National Forest are) in 1942 at a cost of $600,000.

Lode Mining Methods:

In contrast to gold placer mining, lode mining (or hardrock mining) involved the extraction of ore from underground orebodies and required the installation of heavy timbers, water pumps, hoisting machinery, and the like. The separation of silver metal from its complex ores necessitated shipping the concentrates to Germany or Wales for smelting, or the construction of costly mills and smelting works. Outside capital was required and flowed into the Montana Territory as entrepreneurs and industrialists began to realize the potential of the deposits.

By the 1870s, when precious metals were bound up in quartz veins, the following methods were employed to extract the ores and get them to a smelter: Tunnels were constructed into the vein and "timbered" for safety. Ore was blown loose by drilling and dynamite, pulled to the entrance of the tunnel (the adit) in cars (often pulled by mules), loaded into wagons and hauled to a mill where the ore was concentrated, then hauled by wagon to Fort Benton to be shipped to distant smelters. After 1888 wagons hauled the ore to railroad sidings and loaded it onto cars for the trip to a smelter newly assembled at East Helena.

The early milling techniques most used on ores in the Helena area containing low amounts of lead, zinc, or other base metals involved "pan amalgamation." After being crushed in the mills, the ore was fed into large amalgamating pans and mixed with salt, copper sulfate, and finely dispersed mercury. As this mixture was ground, agitated, and steam heated, the salt and copper sulfate attached the silver minerals and converted them principally to silver chloride, which easily could be broken down by further reactions to metallic silver. The silver then amalgamated with the mercury, the amalgam was extracted, and the silver was separated by distilling off the mercury. This process was known as the "Washoe process" and was developed at the Comstock Lode (in Nevada). (Chadwick, Robert, 1982).

CHAPTER 3

BRIEF HISTORY OF EVENTS FOR SELECTED HISTORIC MINING DISTRICTS AND INTRODUCTION TO USE OF ROUTE RESUMES

Several driving routes on the Helena National Forest offer evidence of historic mining and are recommended here for interpretive opportunities. Mining sites on a few routes are now undergoing reclamation. A vicinity map on page 17 shows recommended Historic Mining Discovery Routes. Route resumes for selected routes summarize information and events specific to each historic mining district. Forest employees who implement the mining history interpretive recommendations can use these route resumes for ready reference.

A map at 1/2" = 1 mi. scale is also provided with each route resume to show the specific travel route. Route maps to be used by forest visitors would have symbols and text added which represent exactly what mining artifacts and evidence can be seen, and where, along each route.

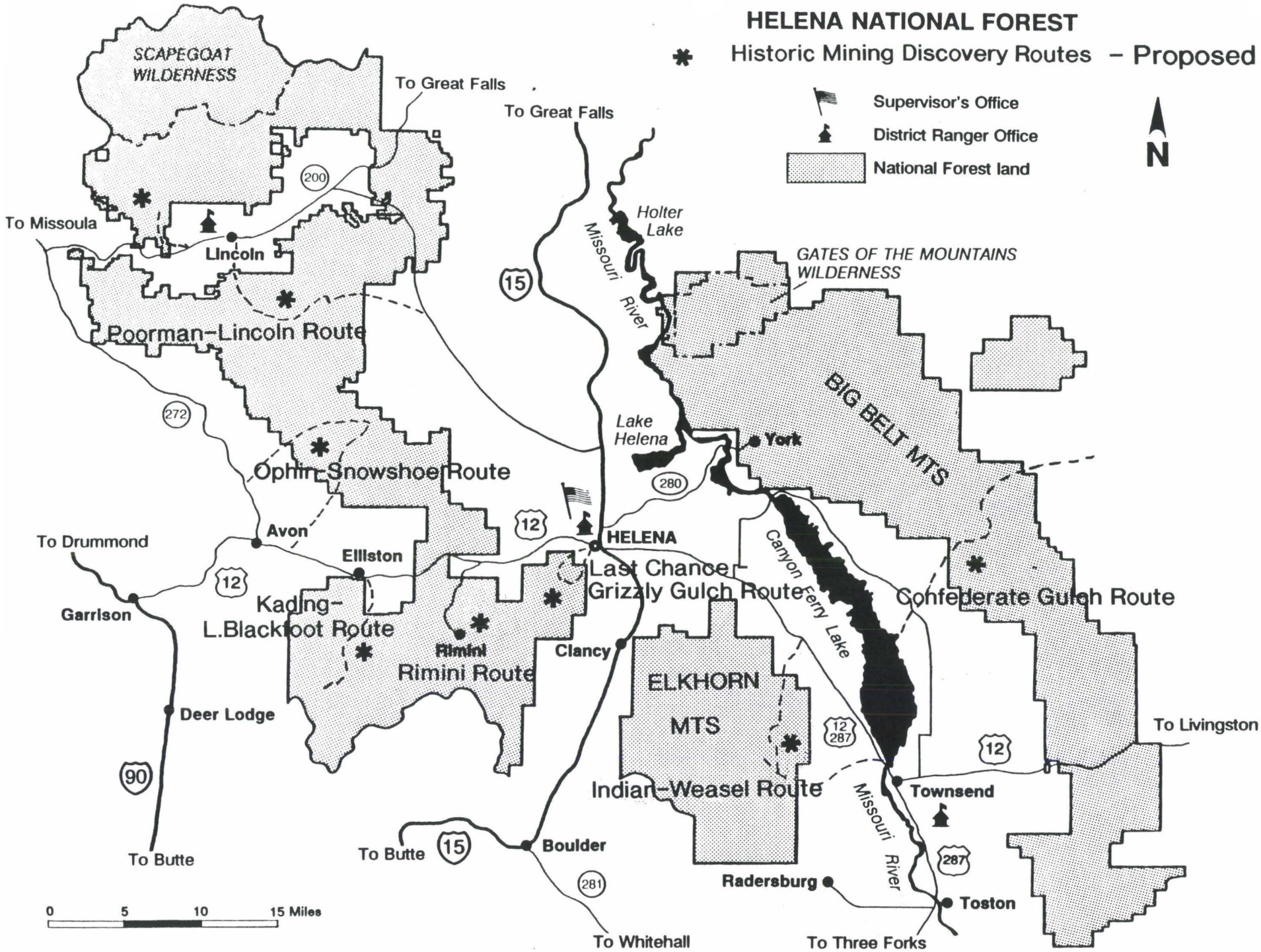
Because of the juxtaposition of National Forest lands with private land inholdings, and the fact that most of the successful mining ventures were patented and became private land, any maps developed for use by forest visitors would have to identify whether specific sites are on public or private land. **An ethics statement must be developed so that people out exploring will understand the Antiquities Act as well as safety issues related to safe viewing of mining sites, i.e. adits, open pits or shafts.** Some routes may only be suitable for driving by and looking, with no other form of "exploring" recommended. Interpretive media will need to be developed which addresses these important elements.

Extensive chronologies and background information had previously been developed by archeologists for two important routes shown on the vicinity map, as follows:

The Ophir Creek Historic Mining District: A Contextual Study, Foster, Lance, Helena National Forest, 1995, covers the Ophir Creek - Blackfoot City - Snowshoe Route.

Elliston Mining District Chronology, Horstman, Mary C., Helena National Forest, 1994, covers the Elliston - Little Blackfoot - Kading Route.

These reports are available for further reference by forest staff in the three-ring binder and project files.


HELENA NATIONAL FOREST
Historic Mining Discovery Routes – Proposed
Supervisor's Office
District Ranger Office
National Forest land
N
SCAPEGOAT WILDERNESS
To Great Falls
To Great Falls
200
To Missoula
Lincoln
Holter Lake
Missouri River
15
GATES OF THE MOUNTAINS WILDERNESS
Poorman–Lincoln Route
BIG BELT MTS
272
Lake Helena
York
280
Ophir–Snowshoe Route
12
HELENA
To Drummond
Avon
Elliston
Last Chance–Grizzly Gulch Route
Canyon Ferry Lake
Confederate Gulch Route
12
Garrison
Kading–L.Blackfoot Route
Rimini
Clancy
Rimini Route
ELKHORN MTS
Deer Lodge
12 287
To Livingston
12
90
Indian–Weasel Route
Townsend
Missouri River
To Butte
To Butte
15
Boulder
287
Radersburg
Toston
281
0 5 10 15 Miles
To Whitehall
To Three Forks

HELENA - LAST CHANCE - GRIZZLY GULCH

ROUTE RESUME

Mining District: Helena Historic Mining District.

Theme: Charcoal kilns, used to make charcoal from cordwood to fuel smelters, are visible along Grizzly Gulch. The results of dredging can also be seen in Grizzly Gulch.

Route Access, Description, and Existing Uses:

Start in Helena at Last Chance Gulch (now a walking mall). An excellent start would be a tour train ride for an introduction to Helena's history. Then drive south up Grizzly Gulch to Unionville on County Road 723, then east along Orofino Gulch on County Road 454, and return to Helena. The roads are graveled and suitable for passenter vehicles.

These roads provide access for residents in the gulches, as well as access for sightseers, hunters, hikers, and mountain bikers. A trailhead near Park City, a former mining camp, now provides access to the Mount Helena National Recreation Trail. Road 723 continues to Park Lake and Park Lake Campground.

Minerals Recovered: Silver and gold - but mostly gold.

Chronology of Events:

July 14, 1864	Four discouraged miners, called "The Four Georgians," discovered gold in "Last Chance Gulch"
1864	Orebodies were found in gulches south of Helena very shortly after the placers were discovered in Last Chance Gulch.
Late 1864	The original townsite of Helena was platted without surveying instruments. The irregular streets conformed to the character of the ground and to the proximity of water.
By 1870	Helena (Last Chance Gulch) had become the most important town in the Territory.
1876	The Georgians sold out and took their gold by wagon and flatboat back east.
1876	Unionville's first building, the Whitlach boarding house, burned.
1880	Pretentious homes went up, and Helena boasted of more millionaires in proportion to population than any other city in the world.
1883	The Northern Pacific Railroad reached Helena.

Names of Most Important Mines:

Colorful names of mines include:

Last Chance Gulch
Whitlach-Union
Yellow Boy
Black Swan
Black Alder

Methods of Recovery:

The standard placer methods were used. Prospect holes and thirty- to forty-foot shafts were dug in Last Chance Gulch. Buildings were set on stilts as the earth underneath was washed for the gold it contained. Ditches were dug to bring water from Park Lake, and the "Yaw Yaw" Ditch was constructed to bring water from Ten Mile Creek ten miles away to upper Last Chance Gulch for the placer mining efforts. (Mockel, Myrtle, 1969).

Lode mining south of Helena (near Unionville) consisted of the usual adits (an adit is a mine entrance which goes horizontally into a mountain while a mine shaft is vertical). In the 1920s, compressors provided power to the pneumatic drills in the mines. Ore was loaded into carts (or "cars") in the mines, and a mule pulled 3 or 4 at a time out to the entrances. Small mills were constructed to crush and treat the ores, which were then treated using amalgamation techniques.

Value of Minerals Recovered (based on value at the time of recovery):

By 1869, the following riches had been reported:

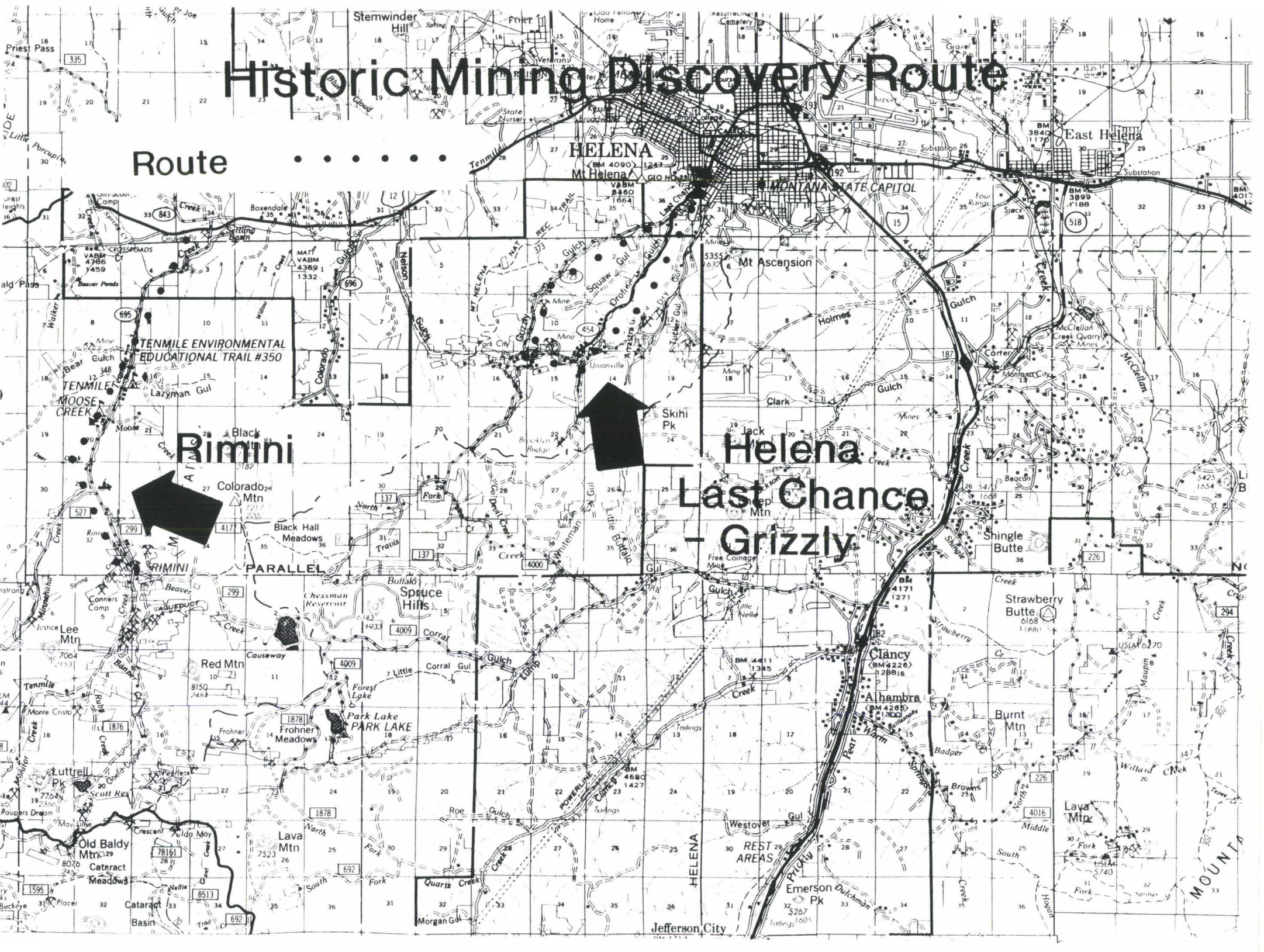
Last Chance Gulch	$7,000,000
Grizzly Gulch	$5,000,000
Dry and Tucker Gulches	$3,000,000
Nelson Gulch	$2,500,000

"Gee Whiz" Facts:

Grizzly Gulch was named after a huge grizzly who made nightly visits to the chokecherry bushes that grew along the path in the gulch.

Unionville was named by Civil War veterans, as were many other mining camps in Montana.

Reclamation Efforts: None at this time.


Historic Mining Discovery Route
Route
Rimini
Helena
Last Chance
- Grizzly
HELENA
Mt Helena
MONTANA STATE CAPITOL
East Helena
Mt Ascension
Skihi Pk
TENMILE ENVIRONMENTAL EDUCATIONAL TRAIL #350
TENMILE
MOOSE CREEK
Lazyman Gul
Black Mtn
Colorado Mtn
Black Hall Meadows
RIMINI
PARALLEL
Spruce Hills
Chessman Reservoir
Causeway
Lee Mtn
Red Mtn
Forest Lake
Park Lake
PARK LAKE
Frohner Meadows
Luttrell Pk
Old Baldy Mtn
Cataract Meadows
Cataract Basin
Lava Mtn
Quartz Creek
Morgan Gul
Jefferson City
Emerson Pk
REST AREAS
Clancy
Alhambra
Strawberry Butte
Shingle Butte
Burnt Mtn
Lava Mtn
Mt Helena City Park
Beacon
Stemwinder Hill
Priest Pass
Baxendale
Unionville
Park City
Montana City
Holmes
Carter
Jack Creek
Clark Gulch
Corral Gulch
Roe Gulch
Westover Gul
Tenmile Creek
Prickly Pear Creek
Little Prickly Pear Creek
Dry Gulch
Squaw Gulch
Grizzly Gulch
Lump Gulch
Whiteman Gulch
Little Buffalo Gul
Devil Creek
Powerline
Dutchman
Hoover
Maupin
Willard Creek
Browns Gulch
Badger Gulch
Middle Fork
North Fork
South Fork
Scott Res
Chessman Reservoir
Mine
Gulch
Creek
Fork
Gul

RIMINI

ROUTE RESUME

Mining District: Rimini Historic Mining District

Theme: Early lead-zinc mining area. The town of Rimini, referred to as "A Hollywood Set Standing in Reality," is included in many books on "ghost towns".

Route Access, Description, and Existing Uses:

Travel 8 miles west of Helena on Highway 12, then south on County Road 695, the Rimini Road along Ten Mile Creek. This is a graveled road suitable for passenger vehicles, although conditions vary by season and the drive can be rough, dusty and slow. The Rimini Road provides access for the 30 - 40 residents of the town of Rimini, described in many books as a "ghost town." The road also provides National Forest access for hunters, snowmobilers, firewood gatherers, sightseers, and hikers, as well as access to Moose Creek Campground and Ten Mile Picnic Area, about 5 miles south of Highway 12. Red Mountain, a 8802' distinctive rhyolite (igneous) dome, looms south of Rimini. The mountain glows red at sunset, and has a popular hiking trail which leads to the top. Rimini has been referred to in magazine articles as "A Hollywood Set Standing in Reality." **Note: the town of Rimini is on private property, and people live here. Visitors need to respect the privacy of the residents.**

Minerals Recovered:

Gold, silver, lead and zinc, and many "secondary" minerals. Some clay was also mined and sold to the brick yard in Helena.

Chronology of Events:

1864	Headwater tributaries of Ten Mile Creek (Monitor, Tucker, Minnehaha, Bear Creeks) worked for gold
1867	John Caplice discovered an abundance of rich ore in the area.
1867 - 1890	Placer "diggins" were mined for gold
1900 - 1903	Placer "diggins" were mined for gold
1870 - 1928	Lode mining
Early 1880s	James Hill, President of the Great Northern Railroad, founded the Red Mountain Consolidated Mining Company in the early 1880s with European capital. He had hoped to build a branch of his railroad into Rimini so ore could be shipped out. His plan failed. He had also planned to bore a tunnel into Red Mountain, but he died before realizing this dream. After his company became the Montana Lead Company, a tunnel was bored 4000' into the mountain, but the city of Helena Water Department, which has a reservoir near Rimini, refused to permit a concentrating plant near the mine so additional development was curtailed. (Wolle, 1963).

1884	Post office established. The town was first called Young Ireland by the many Irish miners who worked here. However, the name Rimini was adopted from a theatrical performance, "Francesca da Rimini."
1886	Rimini-Red Mountain Route of the Northern Pacific Railway brought rail service to Rimini to transport ore and passengers. Previous to railway service, ore was packed out on horses and freight wagons.
1925	Hydraulic methods used to rework gold placers at the Gould Diggins at Try Again Creek.
1925	Railroad line abandoned
1940s	Dry land dredge used at Try Again Creek

Names of Most Important Mines:

Colorful names of mines include:

Peerless Jenny
Lee Mountain (Capeles)
Cooks Diggins (a placer mine)
Gould Diggins (a placer mine)
Sallie Bell
American Flag
Pauper's Dream (gold)
Porphyry Dike (gold)
Nellie Grant
General Grant
Valley Forge
Little Lily
Monte Cristo
Buckeye
Woodrow Wilson Mine
Bunker Hill

Methods of Recovery:

The standard placer methods were used, including hydraulic equipment and a dry-land dredge to rework claims at Try Again Creek.

Lode mining consisted of the usual adits (an adit is a mine entrance which goes horizontally into a mountain while a mine shaft is vertical). In the 1920s, compressors provided power to the pneumatic drills in the mines. Ore was loaded into carts (or "cars") in the mines, and a mule pulled 3 or 4 at a time out to the entrance.

The Porphyry Dike (Gold) Mine was the first open pit mine in Montana -- complete with mills used to recover gold. All the machinery was hauled to the mine by horse team. The tailings from the Porphyry Dike Mine ran down the creek until a dam was built for the tailings pond.

The Valley Forge is the big mine on the hill to the east of Rimini. It operated between 1906 and 1920. Its ore bins from the mouth of the lowest tunnel were connected with the loading station (in town) by an aerial tram.

Value of Minerals Recovered (based on the value at the time of recovery):

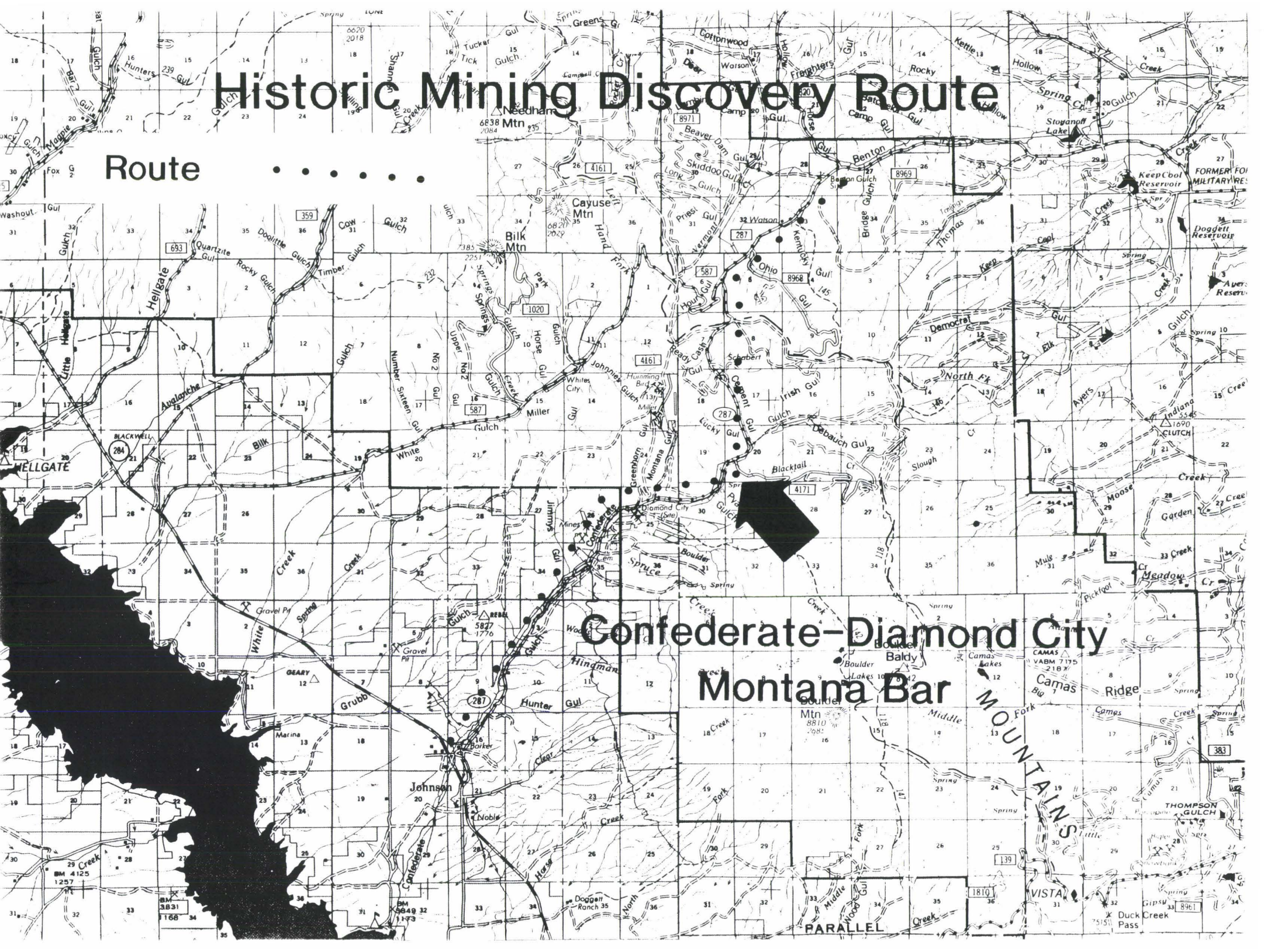
A total of at least $7,000,000 dollars worth of gold, silver, lead and zinc, and other valuable minerals were produced in the Rimini Historic Mining District.

"Gee Whiz" Facts:

Rimini once had 14 saloons. Rimini was the earliest large lead-zinc mining region in Montana. The Porphyry Dike Mine was the first open pit mine in Montana.

Reclamation Efforts:

1993	State of Montana begins inventory of old mine sites and prioritizes them for reclamation. The Rimini Historic Mining District has 4 mines in the top 10 sites with potential environmental hazards.
1996	Helena National Forest is cooperating with Lewis and Clark County, the City of Helena, and the State Abandoned Mines office to do some waste-rock stabilization on Ten Mile Creek from the Bunker Hill Mine site south of Rimini.
1996	University of Montana master's degree candidate completes a project to characterize the Ten Mile watershed and enter information in a geographic information system (GIS).


Historic Mining Discovery Route
Route
Confederate-Diamond City
Montana Bar

CONFEDERATE GULCH - DIAMOND CITY - MONTANA BAR

ROUTE RESUME

Mining District: Confederate Gulch Historic Mining District.

Theme: A landscape created by hydraulic mining.

Route Access, Description, and Existing Uses:

Travel 2 mi. east of Townsend on Highway 12, then 17 mi. north of Townsend on State Highway 284 (mostly paved) east of Canyon Ferry Lake to County Road 287, then turn right (east) and travel on the graveled road into the Big Belt Mountains approx. 5 miles to the site of Diamond City, the now vanished , once fabulous, former "capital of Western Montana". You will see an old routed wood interpretive sign and mounds of gravel tailings, and an occasional rusted piece of equipment -- all that remains of Diamond City, one of the richest mining camps in Montana's mining history.

Road 287 provides access for sightseers, hunters, and a few hikers, and continues over the Big Belt Mountains to White Sulphur Springs in the Smith River Valley. Other gulches into the Big Belts north of Confederate Gulch were also placer mined for gold, including White's, Avalanche, Hellgate (copper), Magpie, Trout Creek/York, but none were close in riches to the stunning deposits at Diamond City and Montana Bar in Confederate Gulch.

Minerals Recovered:

Gold.

Chronology of Events:

Dec. 3, 1864	Gold was discovered by four ex-Confederate soldiers banished to the western wilds by a Union general.
1865 - 1868	Diamond City was in every sense one of the best boom towns of the west, reaching a peak population of 5000 in 1867, when it was known as the wealthiest, gayest, and toughest place in Montana.
Nov. 16, 1867	Diamond City became the first Meagher County seat.
By 1870	Confederate Gulch diggings were "played out" and abandoned by all but a few.
1870 - 1920	Hydraulic mining and dredging continued with limited success.
1959	The last inhabitant of Diamond City was buried near Townsend, MT.

Names of Most Important Mines:

Diamond City was the center of several "bars" (placers on gravel flats in or adjacent to stream beds) and gulches (including Cement), and "Bonanza" was the name of one of the original claims.

Methods of Recovery:

Crews brought water seven miles for the hydraulic work. Every piece of gravel was sluiced, until Diamond City itself was nearly buried by the avalanche of tailings that poured down the gulch.

After the big boom, hydraulic mining and dredging continued with limited success.

Value of Minerals Recovered (based on value at time of recovery):

By 1870, estimates vary from between $10,000,000 and $15,000,000.

"Gee Whiz" Facts:

When the Confederate army was defeated by Union forces in the Civil War, many Confederate soldiers were given the choice of surrendering or being banished to the wilds of Montana. Three of those who chose Montana ended up in the Big Belt Mountains. They discovered gold and named the area Confederate Gulch.

Why was the site of the richest gold camp in Montana called Diamond City? Local lore has it that Diamond City was named because the first four cabins were accidentally located in such a way that the paths connecting them formed a diamond pattern in the snow-covered landscape.

The fantastic yield of $1000 in gold per pan was washed at Montana Bar, in Confederate Gulch. At its peak Confederate Gulch was one of the greatest gold finds on earth, a placer that from one acre of ground yielded an estimated $4,000,000 (immediate post-Civil War values)!

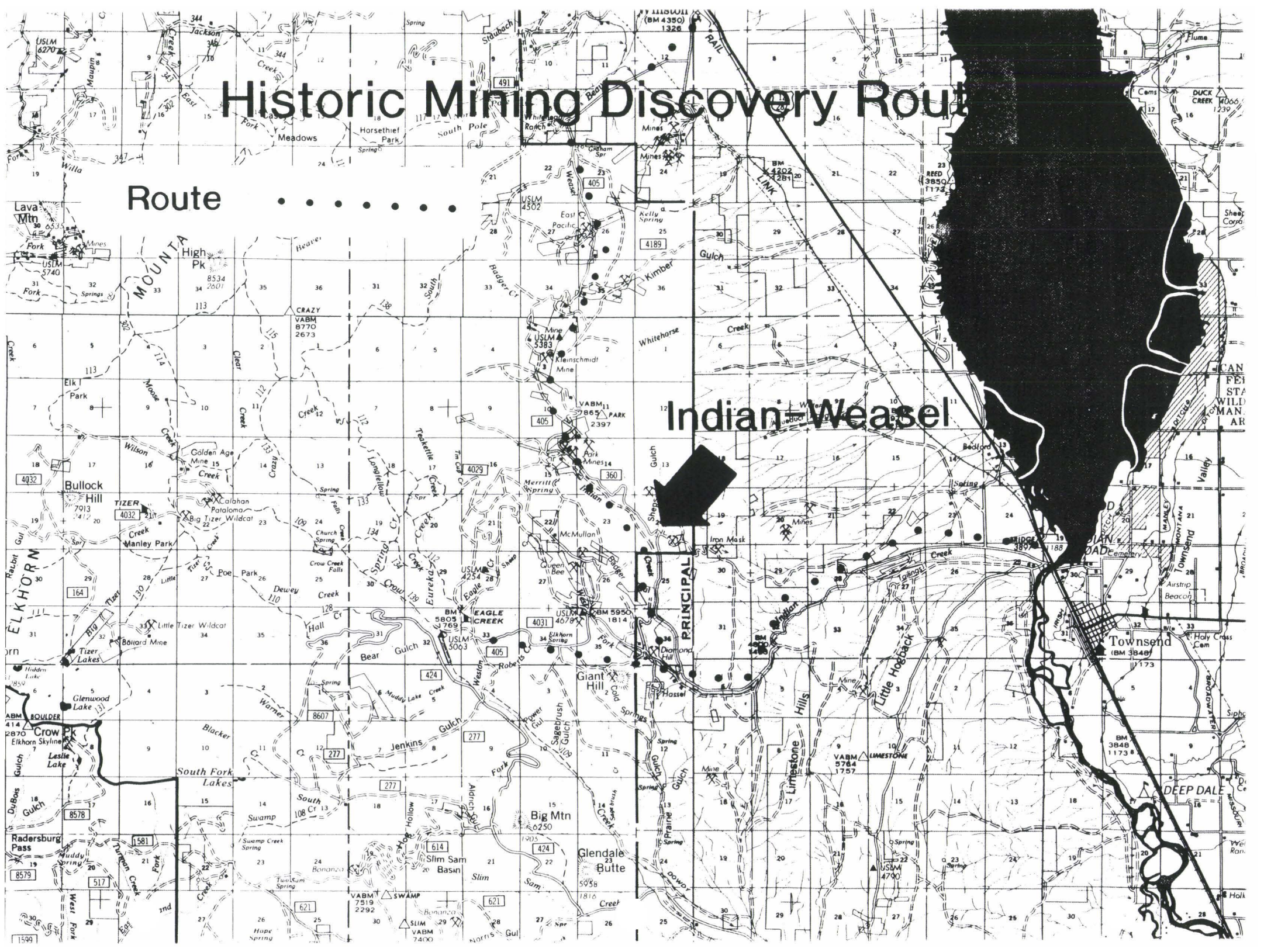
A post office operated from 1867 to 1909.

Roads came in from all directions during Diamond City's boom times in the 1860s, allowing travel of goods and passengers by stage, ox and mule trains to and from Helena, Virginia City, Fort Benton and points beyond.

Vigilantes hung a dozen men. Many fights broke out -- between Union and Confederate sympathizers, between Missourians and the Irish, and because of the usual claim jumping and claim boundary disputes.

Reclamation Efforts:

Small scale prospectors/miners still operate in this gulch. They clean up and reclaim small pieces of landscape as they mine. The Townsend Ranger District reports that they annually remove debris left behind by miners since 1960. Items include junker car bodies, batteries, camping garbage, and remnants of failed placer projects, including hoses, pieces of water pumps, machinery parts -- most left within 100 yards of the Confederate Gulch Road.


Historic Mining Discovery Rout
Route
Indian-Weasel
PRINCIPAL
Townsend
DEEP DALE
Big Mtn
6250
Giant Hill
Bullock Hill
Crow Pk
Elkhorn Skyline
Lava Mtn
High Pk
8534
Meadows
Horsethief Park
South Pole
Elk Park
Golden Age Mine
Calahan
Pataloma
Big Tizer Wildcat
Manley Park
Tizer Lakes
Little Tizer Wildcat
Bollard Mine
Glenwood Lake
Leslie Lake
South Fork Lakes
Radersburg Pass
Slim Sam Basin
Glendale Butte
Diamond Hill
Hassel
Iron Mask
McMullan
Queen Bee
Merritt Spring
Kleinschmidt Mine
Whitehorse
Kimber
Gulch
Bear Gulch
Jenkins
Blacker
Warner
Weston
Roberts Cr
Sagebrush Gulch
Power Gulch
Cold Springs
Limestone Hills
Little Hogback
Elkhorn Fork
Indian
Eagle
Eureka
Spring
Crow
Dewey
Poe
Park
Manley Park
Church Creek
Crow Creek Falls
Longfellow
Teakettle Creek
Tin Cup Cr
Wilson
Moose
Clear
Beaver
Badger Cr
Whitehorse Creek
Swamp
Swamp Creek Spring
Twin Sam Spring
Hope Spring
Muddy Spring
Turnaround Fork
DuBois Gulch
Hidden Lake
Mudd Lake
Aldrich Gulk
Hole
Prairie
Sage brush
Limestone
Airstrip
Beacon
Holy Cross Cem
Cemetery
Valley
Townsend
Broadwater
Missouri
Flume
Duck Creek
Reed
Bedford
Ridge
Lahoo
Mines
Spring
Creek
Fork
Gulch
Hill
Park
Lakes
Pk
Cr
Mtn
Butte
Basin
Hollow
Prairie
Hills
Hogback
Valley
Townsend
Broadwater
Missouri
Deep Dale
Holy Cross Cem
Airstrip
Beacon
Cemetery

INDIAN CREEK - WEASEL CREEK

ROUTE RESUME

Mining Districts: Indian Creek Historic Mining District, Winston Historic Mining District.

Themes: Getting water to the diggings (miles of flumes and ditches were built). Opportunity to view historic mining sites while viewing elk herds.

Route Access, Description, and Existing Uses:

The route begins at the Indian Creek Road 1 mi. north of Townsend. Indian Creek Road passes through Bureau of Land Managment land or private property (patented mining claims) for several miles before reaching the Helena Forest boundary. You will pass three former towns/claim sites called Hog-Em, Cheat-Em, Bet-Em, where mounds of gravel tailings reshape the course of Indian Creek. After you pass through a narrow canyon opening and cliffs rise, you will arrive at the former townsite of Hassel. You may see remains of the mining past, such as rusty oxen shoes, square nails where a blacksmith shop stood, water ditches, foundations of old buildings, and faint ruts left by stage and freight teams, and the remnants of old flumes which carried water to the diggings.

Eagle Guard Station was built in 1895 by Richard "Dirty Dick" Owen, who had left his wife and new-born daughter in Wisconsin to seek his fame and fortune in the gold mines of the new State of Montana. Owen worked at the historic mining town of Hassel. His wife and daughter joined him circa 1898. The cabin was vacant when the Elkhorn Forest Reserve was created in 1906. The cabin was restored in 1991, and is available during the winter as a rental.

The route continues north from Eagle Guard Station on the Weasel Creek Road, Forest Road 405, a mountaintop road not suitable for passenger cars. This is more of an "adventure road" for four-wheel drive pickups or jeep-type vehicles. The route passes near lode mines such as the Kleinschmidt and East Pacific, where millions of dollars in bullion was produced and hauled to Winston for shipment to a smelter. The road returns to Highway 12 near Winston.

The Indian Creek Road provides access for sightseers, hunters, hikers, horseback riders, and mountain bikers. The Elkhorn Mountains are in the Elkhorn Wildlife Management Unit, home to large elk herds

Minerals Recovered:

Gold, silver, lead, copper, zinc, lime.

Chronology of Events:

1866	Placer (gold) discoveries at Hassel (originally called St. Louis)
1867	Gold-bearing rock discovered at East Pacific Mine.
1880	Placer mining "petered out"
1886	Quartz lode mining began at Hassel (in addition to the placer mining).
1890	By 1890 mines up Weasel Gulch were producing tons of ore, which was hauled to Winston and loaded into railroad cars at Winston.

1893	Cheat-Em placers were abandoned.
1895	Diamond Hill (near Hassel) built a 120-stamp mill; 150 men were employed.
1897	A gold nugget worth $450 was found near Hassel on the Little Giant Mountain
1900	Diamond Hill property was closed due to fall of lead and silver prices in the 1890s.
1905 - 1906	East Pacific mine(s) shipped concentrates and bullion worth $1,306,528
1930- 1950s	Lode mining continued intermittently in Indian Creek area
1940 - 1952	East Pacific Mine produced $867,000 (gold, silver, lead)
Current	Mining continues in the Indian Creek drainage at Diamond Hill (for gold) and at Continental Lime (for lime).

Names of Most Important Mines:

Colorful names of mines include:

Hog-Em (Springville)
Cheat-Em
Beat-Em
Iron Mask
Bucking Mule
Iron Age
The Little Giant
Crown Hill
The Glory Hole
Stray Horse
East Pacific Mines (incl. Freiburg, January, Sunrise, Cabin)
Kleinschmidt (incl. Irish Syndicate, Big Casino, Little Casino, Cynosure, Quartette, Emil H., Little Olga, Champion)
Park Mines (incl. Jawbone, Gold Dust, Switzerland, Bullion King, Little Annie, Park New Era, Vulture, Marietta, Blacksmith, Rabideau Brothers, Silver Wave)
Vosburg

Methods of Recovery:

The standard placer methods were used in the Indian Creek placers, with ditches and flumes bringing water for the hydraulic equipment. Some dredging occurred. Dredges were used to rework placers north of Helena from 1935 - 1945.

Lode mining consisted of the usual adits and tunnels. Ore was loosened by dynamite or compressor-driven drills, the ore was loaded into carts (or "cars") in the mines, and a mule pulled 3 or 4 at a time out to the entrances. A 120-stamp mill was used at Diamond Hill to crush the ore. Concentrators and cyanide plants were constructed at some of the lode mines.

Value of Minerals Recovered (based on value at time of recovery):

Random figures were found. The figures that follow are not considered accurate in the books where they appeared.

Indian Creek		$5,000,000	
Weasel-Winston area		Before 1889	Large production of unrecorded value
		1889 - 1908	$1,500,000
		1908 - 1918	
	and	1926 - 1928	$3,000,000
East Pacific		1940 - 1952	$ 867,000

"Gee Whiz" Facts:

After diggins played out at Diamond City (in the Big Belts), discouraged miners came to the Indian Creek district. Placer claims were filed on by the acre with such wholesale gobbling of the land by a few that the names Hog-Em, Beat-Em, and Cheat-Em were given the placer claims.

Lack of water was a problem in all mining activities in Indian Creek. The famous Hassel Canyon Flume was built on the rock walls of the canyon at a cost of $30,000 to bring water from Crow Creek, a distance of 11 miles, to supply hydraulic power to wash gravels. Water was also brought by ditch over 14 miles from Beaver Creek at a cost of $60,000. Remnants of the flume can still be see in the canyon near Hassel.

A boulder weighing about ten pounds brought $1500.00 when assayed; however, the boulder allegedly came from the Madison River (not in Indian Creek area).

At the turn of the century the East Pacific Mine was a small town sometimes called Eagle City. It had mine shops, offices, a 3-story bunkhouse and a boarding house to accommodate 150 men. Some miners and their families lived in shacks tucked into steep mountainsides along Weasel Creek.

Old timers tell of the Edmunson brothers, who staked a claim on East Pacific ground, then held up the Radersburg stage when they knew it was carrying a heavy load of gold. One brother was killed when lawmen caught them. The other brother, Henry, escaped and buried the looted gold near the East Pacific mine. Henry then fled to Wyoming, where he robbed a train and spent time in jail. When he returned to the East Pacific site the Winston Brothers had worked his claim. He collected a $25,000 settlement from them, then set out to recover his buried loot from the stage robbery. He searched but could never find it.

Note: Most of this information was taken from the Broadwater County Historical Society book, *Broadwater Bygones*.

Reclamation Efforts:

The Vosburg Mine was reclaimed in 1995 at a cost of $1.1 million. The East Pacific, Park, Kleinschmidt, and Golden Age are currently being analyzed for future reclamation. The State of Montana is coordinating the effort, as these sites are on private land. The Helena National Forest offers some expertise and local coordination.

LAST LAUGH

He leased a dump, and they
laughed at him --
His chances were so very slim;
But he wasn't buffaloed,
not him.

He merely grinned, and
worked away,
And I think he must have
made her pay --
He's worth a million bucks today.

From: Mining Camp Melodies
By Walt (Rags) Holliday
Copyright 1924, Butte, Montana.

CHAPTER 4

EVALUATION OF INTERPRETIVE METHODS AND RECOMMENDED INTERPRETIVE ACTION ITEMS

EVALUATION

This chapter summarizes interpretive methods, opportunities, and techniques outlined in *The Helena National Forest Information, Interpretation and Education I&E Strategy* and recommends methods to use in providing mining history interpretation.

Media opportunities and techniques were outlined in 5 groups:

1. Signs and Exhibits (Self-Guided)
2. Publications
3. Personal-Guided Programs
4. Audio/Visual Presentations
5. Education Programs

Appendix B contains the outline in its entirety, including a table of comparison of mediums for use in choosing the best media techniques.

Six questions, with answers, were selected from those offered in Appendix B of the Forest Interpretive Strategy. The following list will guide the selection of the most appropriate medium for the mining history interpretive program:

What techniques are most appropriate for the I&E program?

* Auto tour, discovery tour, backroad adventure tour - with or without signs. If signs are used, durable, rustic design and materials are most appropriate to relate to mining theme.
* Publication - guide booklet for sale through an interpretive association.
* Articles for newspapers, magazines, visitor guides.
* Brochures and/or "discovery guides".
* Recreation Opportunity Guide sheet for each route.
* Interactive Video - site forms for each route for entry into Montana's interactive travel information system.
* Field seminars with small groups (i.e. Elderhostel)
* Artist-in-residence program. Artwork and writings may be used for interpretive or education programs related to mining.
* Public excavation, i.e. Passport in Time projects.
* Story telling - stories of mining and camp life.
* Radio and television, i.e. use public service air time to tell the listening public about recreation opportunities related to mining history on the Helena National Forest.
* Education programs, i.e. guided tours with school groups.

Where will each technique be used?

* The above techniques are appropriate for every historic mining discovery route. Routes could be prioritized, or each ranger district could select a route to feature.

Which segment of the audience will use it?

* All segments of forest visitors would be able to use one or more of the interpretive techniques.

Which messages will it reinforce and what information will be used to send those messages?

* Messages to be reinforced include information on a fascinating period of history (primarily the period 1864 - 1950); how mining helped build the west, and particularly this area of Montana; that man's actions have consequences; safety and risk around old mining sites; respect for private land; and the Antiquities Act.

Which technique should be developed first, second, third, etc?

* Recreation Opportunity Guide sheets could be developed first, rather quickly and easily by referring to the route resumes contained in this project report.
* The Artist-in-Residence program is being implemented on the Helena National Forest this summer, in cooperation with the Holter Art Museum in Helena. Artists could be asked to focus on historic mining sites.
* Articles for newspapers, magazines, visitor guides.
* Radio and television talks.
* Publication of a booklet via an interpretive association, showing routes, maps, and pertinent interpretive messages using information assembled in this project report and background project file.
* Public excavation, i.e. Passport in Time project.
* Story telling.
* Education programs.

What infrastructure is required to support those techniques?

Internal support required to implement the above techniques include the forest interpretive specialist. Coordination would be required with unit receptionists, office support staff, the forest visual information specialist, district recreation staff, forest archeologists, and the landscape architect.

Possibly the most important support is that of the Helena Forest Leadership Team, whose members establish the forest's program of work.

RECOMMENDATIONS

Action Item	Proposed Completion Date
Present this project and recommended action items to the Forest Leadership Team to involve them and to gain their support.	October 1996
Complete remaining Route Resumes.	March 1997
Work with appropriate Forest staff to develop an ethics statement so that visitors will understand the Antiquities Act. Include a statement about safe viewing of mining sites.	March 1997
Prepare Recreation Opportunity Guide sheets for historic mining routes, using Route Resumes and the example on page 38.	May 1997
Request one or more artist in the 1997 Artist in Residence program to focus on the topic of historic mining on the forest. Artwork or writing they produce could be used in interpretive media, or one or more artist could perform stories based on oral histories.	Sept. 1997
Draft articles for newspapers, magazines, and State of Montana visitor guides.	March 1997
Participate in radio and television talks about viewing historic mining sites on the Helena National Forest, perhaps in conjunction with Wildflower Week. Note: Radio Station KBBL (Mike in the Morning Show), and a short Channel 12 news presentation (filmed at a site) are opportunities.	May 1997
Publication of a booklet via an interpretive association, showing route, maps, and pertinent interpretive messages from information in this report and in the 3-ring project binder.	February 1998
Propose a Passport in Time project at one or more of the historic mine sites on national forest land (excavation of a dump; drafting interpretive messages from existing information; drawing artifacts or structures for use in interpretive media).	November 1996
Develop a partnership with elementary school teachers for site visits and guided tours when students are learning about Montana history.	Winter 1996-97

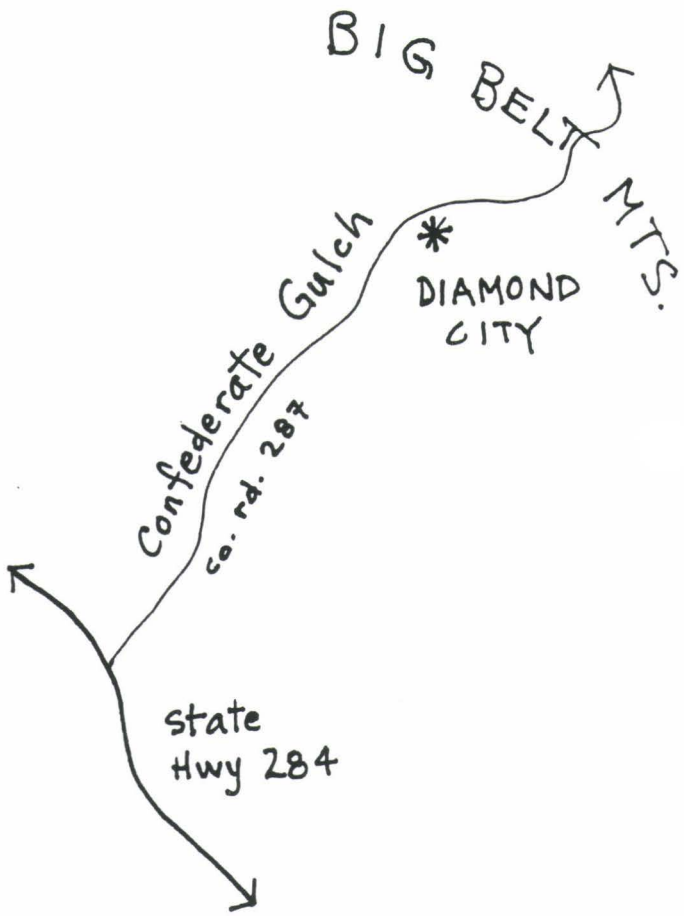
HISTORIC MINING AREA

FOREST SERVICE NORTHERN REGION

United States
Department of
Agriculture

HELENA NATIONAL FOREST
Townsend Ranger District

CONFEDERATE GULCH HISTORIC MINING DISTRICT



ACCESS: Suitable for passenger vehicles during summer (approx. June 1 to Oct. 1). Not suitable for large RVs due to sharp bends with limited sight distance.

Route Beginning: Travel 2 miles east of Townsend on Highway 12, then 17 miles north on State Highway 284 on the east side of Canyon Ferry Lake to County Road 287. Turn right (east) and travel on the graveled road into the Big Belt Mountains approx. 5 miles to the site of Diamond City, the once fabulous former capital of Western Montana.

Route Ending: Road 287 continues east to White Sulphur Springs, or you can return to State Highway 284 and Townsend.

ATTRACTIONS: Diamond City was one of the richest mining camps in Montana's mining history. Now you will see hills of gravel tailings -- a landscape created by hydraulic mining to extract gold.

When the Confederate army was defeated by Union forces in the Civil War, many Confederate soldiers were given the choice of surrendering or being banished to the wilds of Montana. Three of those who chose Montana ended up in the Big Belt Mountains. They discovered gold and named the area Confederate Gulch.

Why was the site of the richest gold camp in Montana called Diamond City? Local lore has it that Diamond City was named because the first four cabins were accidentally located in such a way that the paths connecting them formed a diamond pattern in the snow-covered landscape.

The fantastic yield of $1000 in gold per pan was washed at Montana Bar. At its peak Confederate Gulch was one of the greatest gold finds on earth, a placer that from one acre of ground yielded an estimated $4,000,000 (post-Civil War values)!

Hydraulic mining was used in Confederate Gulch, where the gold was located in gravel terraces (or "bars") well above current stream levels. Water was brought to the site in flumes and then carried through several hundred feet of canvas hoses to huge nozzles. The massive jets of high pressure water from hydraulic nozzles were said to have enough force to smash a brick building with a single pass at a range of several hundred feet. These nozzles were used here at Confederate gulch to wash down high gravel banks to flush their contents through sluice boxes, where the gold was captured.

NOTES: It is illegal to excavate, remove or damage any historic or pre-historic resource located on public lands. All mining sites are potentially dangerous. Please use caution when viewing the Diamond City area.

CHAPTER 5

CONCLUSIONS

The following conclusions were reached while writing this paper:

1. Interest in historic sites is high nationwide, and interest in mining reclamation is increasing in the western states.

2. Mining on or adjacent to what are now lands managed by the Helena National Forest was extremely important in shaping the landscape and culture, as well as building the Helena, Lincoln and Townsend areas.

3. Prodigious amounts of literature have been written about the subject of mining in Montana, and in the gutsy and glorious camps in the gulches around Helena. I developed a 3-ring binder of reference material for use by those of us who implement the recommendations.

4. Each gulch has its own story -- some stories are especially colorful and significant. Developing an interpretive plan for just one gulch would make a good Clemson project.

5. Most of the historic mine sites are actually on private (patented) land inholdings. When producing interpretive information, we must address the ethics of viewing mine sites, and provide media which is sensitive to the private land issue. Also, because of this factor I have recommended mining discovery tour route guides in the form of brochures and/or a guide booklet as the key method of providing interpretation. These methods serve as both a guide and a souvenir for visitors, and fits with current budget and person-power realities.

6. Because of the hazards associated with viewing old mine sites and those undergoing reclamation, and because of the potential for vandalism and the removal of artifacts, interpretive message must carry strong messages about safety as well as the Antiquities Act.

7. "Route Resumes" were developed for selected historic mining areas. These summaries can be used to develop Recreation Opportunity Guide (ROG) sheets, site forms for Montana's interactive travel information system, and brochures or guide booklets to be used by forest visitors. With fewer employees on hand to carry this project forward, the route resumes set the stage so that with minimal further effort we can produce interpretive information.

8. Because of mining reclamation efforts going on right now, both on the forest and on adjacent patented/private lands, timing is good for partner involvement, i.e. with the State of Montana, mine owners, area museums, old timers, artists and writers. By pooling funds and resources we can provide appropriate interpretive information at a time when interest is high in both historic mining sites and mining reclamation.

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APPENDIX A

GOALS, OBJECTIVES AND GUIDELINES FROM THE HELENA FOREST INTERPRETIVE STRATEGY

The following text is an excerpt from the document ***Helena National Forest Information, Interpretation and Education Strategy***", completed in December, 1995.

Management Needs: Overall Program Goals

The following goals are identified to help the Forest achieve the stated vision for information and education (I&E) on the HNF:

- I&E programs on the HNF present a positive, professional image of the USFS by providing clear, concise orientation, and interpretation of resources on the HNF, while enhancing the visitor's experience by increasing customer satisfaction through orienting visitors to numerous opportunities available on the HNF;

- I&E programs are holistic and integrated, focusing on and clarifying the complex relationships that exist within and between human and natural systems, recognizing that humans are part of natural systems;

- I&E programs enhance public understanding of, and appreciation for, the natural and heritage resources on the HNF and management of those resources to ensure conservation and protection;

- I&E programs provide learning opportunities for diverse audiences, including people of different ages, physical and mental abilities, cultural and economic backgrounds, value systems and geographic origin;

- The HNF enlists the cooperation of institutions, organizations, other agencies, and individuals in their interpretation and education efforts in developing broad public understanding of and support for the wise management and use of forest and rangeland resources;

- and provide the public with the foundation of knowledge needed to become fully informed participants in ecosystems managment.

Overall Program Guiding Principles

In addition to FSM 1600, the following principles will guide us as we refine and implement the I&E program on the HNF.

- the interpertive strategy will tier to the existing Forest Plan and POW and will be monitored for effectiveness and quality on a regular basis, changes will be based on monitoring;

- a "systems approach" planning process, which identifies interrelated themes and interpretive opportunities, will be applied for all I&E program efforts;

- I&E services will be used as a management, public awareness and customer service tool in all resource and project planning efforts;

- a mix of personal and non-personal services that provide factual information appropriate to a specific audience will be provided. A range of interpretive opportunities will be designed within recreation opportunity spectrum guidelines, (ROS) and made accessible to all visitors;

- maintenance schedules and funding will be identified and developed for all interpretive facilities (mediums) to insure that facilities are up-to-date, in working order, and present the proper image of the HNF;

- interpretive efforts will be coordinated in areas adjacent to the HNF and will be developed in partnership when appropriate;

- efforts will be made to tap-into and use existing education curriculum and will be monitored for effectiveness.

F. Heritage Resources

Goals:

F.1 • Enhance understanding, appreciation and enjoyment of the prehistoric and historic resources as they relate to one another on the HNF and surrounding areas.

F.2 • Increase awareness of management enhancement/restoration programs and stimulate participation in heritage resource programs.

F.3 • Increase awareness that Native American tribes still have a legally vested interest in access to management of forest areas

Objectives: The following objectives outline the intended visitor outcomes of interpretive planning related to **heritage resources.** These are the key concepts and attitudes that visitors should take home if the interpretive message is successful. The objectives also outline behavior that the interpretive program is designed to encourage.

Knowledge:

1. There are places to visit on the HNF that allow for observation and exploration of heritage resources.
2. Increased awareness of heritage resource laws/legislation regarding the preservation and protection of our heritage sites.
3. Visitors to the HNF will become aware that the Forest is the ancestral homeland and hunting/gathering territory of some comtemporary MT indian tribes, including Kootenai, Salish, Blackfeet, and Shoshone.
4. The HNF has areas that were and continue to be home to extensive mining, logging and ranching efforts.
5. Mining and logging was important to the development of nearby communities that effect the way things are today.

Attitude:

1. Pleased and satisfied with learning about human history in Montana.
2. Awed by and aprreciation of, the extent and complexity of the Native American miners, and rancher's life styles.
3. Respect for the courage, adaptability and ingenuity of early people of the area.
4. Appreciation that there are regulations that protect heritage resources as a nonrenewable resource.

Actions:

1. Practice and understand rules and regulations protecting heritage resources.
2. Locate and visit heritage resources throughout the Forest in a way which promotes the preservation of these resources.
3. Share their knowledge of heritage resources with others in a positive manner.
4. Participate in protection, restoration and enhancement efforts of heritage resources.

Heritage Resource Subject	Site/Area
1. Native Americans	Missouri River, Elkhorns
lifestyles,	Hellgate Gulch (pictograph panel)
travel routes, seasonal migration	
land ethics and technologies	
2. trappers/exploration	Missouri River (Gates of the Mountains - Coulter CG & Meriwether Picnic Ground)
influence on present wildlife species	
Lewis & Clark	
3. mining: and it's influences	**Rimini, Orofino Gulch, Blackfoot City,**
placer and lode mining	**Little Blackfoot drainage, Charter Oak,**
mining districts	**Golden Anchor Mine, Ophir Creek,**
ditch systems and water development	**Park Lake ditch, Elliston,**
reclamation efforts	**Charter Oak, Vosberg, Poorman drainage**
stamp mills	**Rimini, Lincoln, Confederate Gulch, Ruddville**
4. agriculture/ranching	
ranching supported mining	
grazing: historically/present	Elkhorns
water ditches	
homesteads	
5. townsites	Ruddeville (Elkhorns),
evolution of development	Hassel, Jim Ball Basin,
population, number of buildings	Blackfoot City
unique features and stories	
6. transportation systems	Dalton Mtn., Mullan Raod,
stage roads & stations	Clarks Canyon stage stop
cattle drives	
railroads	10-mile creek
lumber roads, flumes	Mike Renig Gulch, Telegraph Creek
7. Forest Service administration	
Eagle Guard Station	Eagle Creek
Bill Springborn Cabin	Lincoln
Tizer Guard Stations	Tizer Basin
rental cabins	forest-wide
fire lookouts	forest-wide
historical organization & districts	forest-wide, Radersburg admin. site
Lincoln cemetary and townsite	Lincoln
Mann Gulch fire event	Mann Gulch

Main Theme(s):

- Looking to the past helps define the present.

- A comparison of early lifestyles and technology provide opportunities for reflection on values of contemporary cultures.

- Artifacts and structures protected by the Archeological Resources Protection Act and other laws, tell a valuable story about the human relationship with wildlands.

Partnership Opportunities:

Montana SHPO,
Montana Historical Society,
Blackfoot Historical Society,
Broadwater County Historical Society,
local businesses and Chambers of Commerce,
community residents, schools and groups,
MSPWIA,
Helena Outdoor Club
American Indian tribes,
MT. Archeological Society.
Historic Preservation Commission

Key Mediums:

on-site, publications,
auto tours, PIT projects,
video documentataries, feature
stories, living history,
special events

Monitoring Activities:

- decrease of vandalism and looting at sensitive heritage sites.
- increased involvement in PIT and other resource protection projects.
- increased partnerships that involve protection/enhancement of heritage resources.

APPENDIX B

MEDIA OPPORTUNITIES LISTED IN HELENA FOREST INTERPRETIVE STRATEGY

The following text is an excerpt from the document "***Helena National Forest Information, Interpretation and Education I&E Strategy***", completed in December, 1995.

I&E Media Opportunities

The following groups of medium techniques have been divided into five groups and are discussed in detail in how they could be used on the HNF. They include; signs and exhibits, publications, personal or guided programs, audio/visual presentations and environmental education programs. At the end of the discussion, pros and cons are listed for each type of technique, with a list of questions to ask when prescribing mediums for specific programs.

1. SIGNS AND EXHIBITS (SELF-GUIDED)

Gateways: Facilities located at all highway and primary access road entries to public land. The objective of a gateway is to welcome and orient visitors to the HNF by providing use information. Gateways should be designed to serve road speed legibility and for brief duration stops via pull-offs or pull-throughs with signs to be read from the vehicle. Information would include geographic, facility, recreation, interpretative and regulatory information.

Corridor Portals: Facilities located at entries to major access points on the Forest. The objective is to provide corridor orientation and information. Facilities may include pull-off or pull-through roadside kiosk or information boards designed either to be read from vehicles or for short duration pedestrian visitation.

Trailheads: An information board or other entry way facility that combines trail specific information, the whys and hows associated with safety, resource protection regulations and interpretation of natural and heritage resources and points of interest.

Auto Tours or Byways: Designated travel routes for specified types of vehicles. Routes are designated based on interpretive and scenic qualities, road standards, length and potential to provide loop experiences or access to other major roads. Interpretive media is in the form of a publication or a few on-site signs. The auto tour provides an opportunity to interpret a larger area than would be possible with other media. It may even stimulate interest in other interpretive opportunities on the Forest. Interpretive themes may encompass a spectrum of opportunities relating to the entire Forest or to the travel route itself.

Interpretive Trails: A designated self-guided, walking interpretive trail, usually .5 to 2 miles in length. Route is designated based on special features, interpretive and scenic qualities, trail standards, length, and reasonable visitor access. Interpretive trails where possible should form a closed loop with the beginning and end at or very near the same location. Interpretive media is provided via brochure, field notes, or trail side interpretive signs. Interpretive themes may vary with the resources available or it may have an overall theme with supporting sub-themes, i.e. fire ecology and related plant life.

Site-specific Interpretive Displays and Exhibits: Facilities may include interpretive signs, tactile displays, or other interpretive media. Facilities are designed to enhance overlooks, vistas, trails, wildlife viewing areas, heritage sites or other features and points of interest.

Interpretive Sign: Thematically designed sign covering various topics used at viewpoints, near special features, in kiosks, along trails, and at roadside pulloffs. Mounted so they are visible to all viewers, they are made of a variety of materials.

Display: Thematically-designed flat wall displays that use maps, photos, art work, and text to interpret various topics. They are located indoor or outdoor under cover.

Exhibit: Thematically designed three-dimensional exhibit may include artifacts, user activated devices, hands-on replications, specimens, etc. Usually includes text or audio messages.

Kiosk: A small outdoor structure with orientation, information or interpretive displays with a roof for weather protection.

Diorama: A type of exhibit in which an indoor or outdoor scene is replicated whether in a full-size or scale-reduced size. Natural and artificial materials are used to create the scene and the senses of touch and smell may be used to reinforce the viewing. Visitors usually view the scene from outside, but in some cases are encouraged to walk through the exhibit.

Mannequin: a life-like human model used to interpret historical dress, artifacts, and activities.

Relief Model: This is a three-dimensional topographic scaled model showing land forms, facilities and features on the land. Some have push button lighting and text to emphasize the explain the area's attractions. Adjacent photos can be used to show visitors on-the-ground views.

Replication: A life size replication of an artifact or natural item that visitors can view, touch or use.

Sensory Device: Specialized exhibits that utilize the senses of touch, smell, hearing and taste to interpret. Included are touch tables, temperature control devises, scratch and sniff displays, etc.

Specimens: A type of exhibit in which real specimens of animals, plants, rocks, etc. are displayed and interpreted.

Timeline: A type of exhibit in which time is plotted and events highlighted along a line. The highlighting may include text, graphics, photos, etc.

2. PUBLICATIONS

Interpretive publications may include everything from self-guided leaflets and single-page checklists to extensive books on flora/fauna, geology and wildlife. Publications are just one of the many tools to convey the message and perhaps a key methods for use on the HNF. Publications can be fairly quickly produced and placed in the hands of the visitors, while having take-home value as well. Through publications the interpretive message can be widely distributed and when read in advance they orient and sensitize visitors to the area. Literature can focus specifically on orientation information, general themes or specialized information and themes. Publications can be used off-site, or on-site. Partnerships for developing interpretive publications are favorable. Publications also lend themselves to the opportunity of being sold to the public and profits can be reinvested for producing additional publications.

Articles and Public Service Announcements: The HNF should seek out newspapers, magazines, catalogues, visitor guides, fishing guides, etc and offer resource management articles or interpretive information that could be included in these publications. Standard articles that deal with topics such as heritage resource protection, ecological processes, wilderness and fire could be written and submitted on an annual basis.

Weekly or monthly articles on current resource issues, projects and management concerns could also be submitted to local papers. Article topics could also include simple "did you know" facts and interesting anecdotes about HNF resources and the surrounding area. A constant flow of general resource information will enhance the public's awareness of HNF policies and practices. It will also encourage readers to respond with constructive criticism or support for various management programs.

Local and regional outdoor/sports writers could be encouraged to write articles and editorials which encourage land use principles and offer minimum impact use methods. Writers should be contacted directly and could be offered rationale, statistics and guidelines by the HNF. Certain topics could appear annually and others may be appropriate at shorter intervals or as part of standard recreation articles.

Guide to the HNF: A basic orientation guide for visitors that provides a thematic overview of significant stories and lists key features on the HNF.

The Story Behind the Scenery: An inexpensive soft-cover souvenir photographic overview of the important features and stories of the HNF and surrounding area. This publication could also be more specific to areas on the Forest, such as the Gates of the Mountains, the Bob Marshall and Scapegoat Wilderness Areas or rental cabins.

Travel Alternatives: A series of brochures presenting alternatives to people with varying amounts of time available. They present itineraries and suggestions for people with 1/2 day, one day, three days and a week. They list key features to see, what activities are available, what wildlife they may view and brief interpretive statements about key features.

Free Material: A variety of interpretive and informational materials displayed and given away by the HNF. The materials include brochures, small maps, newspapers, posters, pins, patches, pencils, and other Forest-related materials.

Sales Materials: A variety of interpretive and informational material usually displayed and sold by a non-profit interpretive association. The materials include books, brochures, maps, slides, posters, videos, calendars, games and other forest-related materials.

Pre-trip Information: A publication coordinated with all Forest partners and interests to provide potential visitors with pre-trip information about the Forest: what to see and do, where to stay, weather, information phone numbers, etc.

Discovery Guides: Specially written guide used by visitors to assist them in discovering places to see, things to do , and things to learn about. The guides include maps, interpretive information, photos and illustrations. They can be organized by travel routes such as roadways or waterways.

Recreation Opportunity Guides: Forest Service information sheets providing information on specific recreation opportunities on the HNF. Information sheets specific by trail, roads and heritage sites.

Trail Guides: Similar to ROG sheets for trails. These trail guides could be pamphlet style organized for specific trails, group of trails or types of trails such as XC ski trails or mountain bike trails of the HNF.

Watchable Wildlife Calendars: A calendar indicating what wildlife species there are to see, where to see it, the best time to see it, road closures, species facts and information, and a brief interpretation of the habitat to see it in.

Wildlife Factsheets/Notebooks: Utilizing the Northern Region format. This publication identifies wildlife viewing sites on the HNF. Includes introductory material, observation tips, habitat descriptions, seasonal wildlife activities and viewing ethics. Wildlife Viewing Notebooks are loose leaf binders. New sheets can be created and added to the binder as new sites are designated or sheets developed. The concept is similar to ROG sheets.

Activity Guides: Special written guide used by both children and adults to lead them through an activity in the Forest or in a visitor center.

Seasonal Newsletter: Newsletter to be given to the public and other agencies for informing them of special events and topics of interest. Could be printed in partnership with local newspapers or Chambers of Commerce.

3. PERSONAL-GUIDED PROGRAMS

Office Reception/Visitor Receiving Areas: Facilities may include an information desk, permanent exhibits, amphitheaters, reference or library space, rest rooms and other supporting interior and exterior features. The objective is to provide the foundation of the interpretive themes in the area. By serving as the visitors first stop it encourages them to visit specific related features.

Guided Hikes: Guiding a group of people on a trail. Special features of the trail or area are interpreted.

Group/Outdoor School Facility: Facilities used as an outdoor school or group facility on a reservation basis. Accompanying study material relating to the use of the site would be developed with nature trails, wildlife viewing areas, or rental cabins. Workshops could be held to instruct teachers and group leaders in the use of the facility.

Field Seminar: An outdoor program for small groups covering various heritage and natural resource subjects. These programs cover one or more days and have a fee.

Artist-In-Residence Program: This program provides professional writers, composers, sculptors, painters, performs and other visual and performing artists an opportunity to pursue their chosen art while occupying rental cabins on the forest. In return for the use of cabins, participants are aksed to donate to the Forest a piece of work representative of their style and their experience while in residence. Artwork and writings may be used for interpretive and educational purposes.

Demonstration: A live demonstration by an interpreter of a technique or process such as flint knapping or basket weaving, may be done indoors or outside by a single individual or group. Visitors may be encouraged to participate.

Public Excavation: An archaeological excavation developed especially for the purpose of allowing visitors to assist an archaeologist in conducting a scientific archaeological investigation.

Story Telling: An interpretive technique where a factual, legendary or fictional story is creatively told to a variety of size audiences in an indoor or outdoor setting. Story tellers may use supporting aids to enrich the story such as props, costumes, music, sound effects, etc.

Outfitter/guide Interpretive Trip: Commercial guides act as effective information disseminators to a segment of the HNF visiting population. The influence of commercial guides on the opinions and knowledge held by their clientele has been documented. It is in the best interest

of the HNF to attempt to inform guides of accurate and appropriate resource information and interpretive topics as well as to encourage safe hunting and minimum impact use practices.

Volunteers and Community Service Projects: The HNF should actively seek volunteers for assisting in providing interpretive services. The keys to successful use of volunteers are recruitment, clear job/duty descriptions and appropriate supervision and training. Community social service agencies, school groups and scouting organizations are excellent sources of work forces for short term projects and special events.

Service Projects: Organized work projects for volunteers or groups. While volunteers are giving their time and effort, they also learn more about the project (resources) they are working on, the area and management goals.

Special Events: Special event interpretive programs may provide activities at unusual times of the year or in unusual settings. Special events may be planned to reach visitors not ordinarily contacted during the main season and open up excellent opportunities for working with residents in the area. Special events may include but are not limited to; special management and volunteer projects, project field trips, guided moon light ski trips, guided wildlife viewing trips, and academic studies.

4. AUDIO/VISUAL PRESENTATIONS

Radio and Television: Utilize free air time offered to public service organizations. One minute or thirty second spots could be written on a variety of subjects. These "Interpretive Minutes" could be utilized to spread the word concerning minimum impact techniques, prescribe burning, resource management problems/solutions, special events or simply enlightening the listening public to interesting facts about the HNF and surrounding area. It should be offered on a regular basis through out the year and deal with seasonally appropriate topics.

The power of television is rarely utilized by federal land management agencies. Many local/ regional news stations actively pursue land use, outdoor recreation and public safety topics. Shorts segments could be developed in partnership with MFWP. Local stations should be contacted with well thought out and researched topics in hand.

Interactive Videos: A video program in which visitors interact with the program displayed on a monitor by responding with touch screens, buttons, or control sticks. The programs include menus of orientation information, learning games, etc.

5. EDUCATION PROGRAMS

Education Seminar Series: Professional speakers from a variety of organizations, and agencies speak on various topics over a series of sessions that are linked by a broad theme. Hosted in partnership with Carrol College and other agencies. Target adult and student audience.

Education Field Days: A series of subjects/activities are presented throughout one day (or a series of days). Students rotate from learning station to station.

Education Trunks: Activity trunks with corresponding curriculum and tools.

Speakers Bureau: An organized group of qualified speakers, identified to speak on various subjects and topics.

Elderhostel Program: A nationwide and worldwide series of educational programs developed for and available only to people over 65 years of age. Programs cover a diversity of subjects and the length of the programs vary.

Natural Resource Conservation Education Curriculum:

Trunks/Boxes
Project Learning Tree
Project WILD
Project WET
Ecosystem Matters
NatureScope
Investigating Your Environment
Neotropical Migratory Birds: Songbirds Blues Box

Choosing the Best Media Technique

All of the medium techniques listed are tools which provide valuable means of communicating with visitors and each has applications where it is more appropriate. They key to effective mediums is choosing the technique or techniques that are appropriate to the program goals, objectives and circumstances. Answers to the following questions can help guide the most appropriate medium for each I&E program;

- What techniques are most appropriate for the I&E program?
- Where will each technique be used?
- Which segment of the audience will use it?
- Which messages will it reinforce and what information will be used to send those messages?
- Which technique should be developed first, second, third, etc?
- What infrastructure is required to support those techniques?

TABLE III: COMPARISON OF MEDIUMS

PROS	CONS
Signs/Exhibits (self-guided) Relatively inexpensive, depending on the types of materials used. Does not require staff time, other than design time. Self-pacing Always available. Highly visable.	Passive- requires mental effort. Not usually multi-sensory. Communication is 1-way. Maintenance and security required. No souvenior value (unless stolen). Takes time and money to update. Sign may intrude on view, sign pollution depending on location.
Publications Self-pacing Relatively inexpensive if produced in quantity. Can be sold, souvenir value. Can offer varying levels of detail Can tell a story off-site, carrying interp. messages beyond boundaries Commonly asked questions can be easily tailored to suit different audiences while interpreting the same information.	Can create litter problems. Can be discouraging if the text is too long. Require periodic revision and updates Overused. Visitors may be biased against them. Dynamic concepts can be difficult to communicate concisely.
Personal/Guided Programs Can meet with large number of people at once. Can be designed to meet needs and interests: differing groups Sends strong positive message about Communication is 2-way. Questions can be answered, presentation can be adjusted Can take advantage of unusual or unexpected opportunities. Low maintenance.	Time intensive, requires trained interpreters. Not in place at all times. It's expensive. Not self-pacing for visitors. No souvenir value. Higher personnel management costs.
Audio/Visual Programs Can reach a variety of audiences and in large numbers. Can serve as a vehicle for 2-way communication.	To be effective they should be professionally produced. Potential for failure of A/V equipment.
Envrionmental Education Can format presentations around classroom curriculum. Alot of existing curriculum (ideas) can be easily adapted. Eager audience Relatively low maintenance and low cost Opportunity to follow thru with groups year after year. Captive audience, 2-way communication	Classroom setting is not "outside". Extra effort necessary to bring the outdoors, indoors. Potential to fill role of strictly entertainer.

Comparisons of Media Materials

At this time, establishing cost ranges that have validity is difficult because of the lack of specifications. This is particurlary true of publications. Consequently, some assumptions have been made and were calculated for generic strategies such as books, booklets, signs, etc. Specific breakdowns for cost (labor, materials, etc.) are difficult to estimate without specifications and they can be variable from job to job. Because of this, only a high-low range for medium fabrications have been provided. Costs have not been included for sign materials, however a comparison of materials' effectiveness is given.

MEDIUM	ASSUMPTIONS	# OF COPIES	COSTS ($)
MAP/BROCHURE	9" x 12", 80# gloss stock paper	5,000 10,000	$3,250 - $3,500 $4,000 - $4,400
BROCHURE	9" X 12", folded twice, 2-color, 4 half-tones	5,000 10,000	$2,000 - $2,200 $2,400 - $2,650
BOOK (Explorer's Guide)	128 pages, saddle-stitched, 80# 4-color gloss cover, 16 pages of 11x17 4-color maps	5,000 10,000	$20,000 - $25,000 $27,000 - $36,000
SPECIALITY GUIDE BOOKS (Hiking Guide)	Blk/white 28 pages, saddle-stitched, 20 half-tones	5,000 10,000	$2,800 - $3,200 $4,400 - $4,800

Design Guidelines

Maximum creativity is encouraged in developing media to accomplish interpretive goals. Design guidelines are established as parameters to achieve a high quality product and reflect a professional image of the HNF.

- Special consideration in exhibits must be given to persons with physical hearing, sight and developmental disabilities.

- All informational/interpretive media shall meet Uniform Federal Accessibility standards to provide universal access to people with physical and mental disabilities. Standards are provided in the "Programmatic Accessibility Guidelines for Interpretive Media", prepared by the National Park Service Harpers Ferry Center, March, 1988.

- All exhibits must be highly durable and require minimal maintenance.

- Some exhibits should incorporate flexibility for seasonal rotations and/or future udates.

- Exhibits should be as interactive as possible.

- Follow the principle "less is more" in keeping exhibit content simple and uncluttered, yet sophisticated enough to challenge visitors to explore beyond the office reception area.

- An external bulletin board/kiosk or other design solution should be located at all forest units offices that enables visitors to receive basic information around the clock, 365 days a year, regardless of office hours of operation.

I&E Project Schedules

At this point in time, efforts are underway to develop "meaningful measure standards" for I&E programs that will be consistant with the Meaningful Measures program on the HNF.

When each interpretive project is analyzed for priority, it should be placed in one of two basic groups; **critical projects** which form the basis of the interpretive program and reflect the Forest program of work and **secondary projects** that compliment but are not vital to the program. Until meaningful measures are developed for I&E programs, decisions for prioritizing implementation of I&E programs within the above groups should be based but are not limited to the following criteria:

- How well will the project meet established goals and desired future conditions?

- Is the project necessary for implementing an element of the Forest program of work? Are project time tables coordinated with other programs.

- What percentage of the identified audience will the project reach? What is the accessibility by the audience to the message? Do support facilities presently exist?

- Will project implementation allow for economic development in rural areas?

- How well will the project function under existing parameters?

- Identify current condition or setting of the I&E site. Is it run down? Out of date? Unsafe? Inaccurate?

- Identify sensitivity of the site or resource. Can the site withstand more use?

- Does the I&E project provide for, or enhance visitor safety?

- Do people need to be drawn away from the site, or do managers need to make an effort to upgrade visitor's behavior? Is the project necessary to modify undesirable behavior that will decrease resource impacts?

- Is the project necessary for communicating important management messages? To single visitor groups or to many visitor groups?

- By implementing this project, is there the potential for increasing non-traditional uses?

- Can the project support numerous I&E themes?

- Will the project allow for developing partnership and challenge cost-share opportunities?

- Has funding has been identified and allocated?